

# Perennial Horticulture Cracking Research



Cracking of sweet cherry fruit can be a costly problem for growers. Late season rainfall and the extent of damage from cracking is unpredictable. The mechanisms behind fruit cracking in association with rainfall are complicated and dependent on a number of factors. Recent Tasmanian research has explored some of these factors, and assessed management strategies.

## Factors

### Mechanisms

Two modes of water entry (vascular or skin) means dual approaches to management

### Fruit and skin

Combined effects of fruit skin thickness, fruit size and turgor pressure best explains differences in cracking levels seen in the field, not size, sugars or firmness alone

### Soil Moisture

A link has been found between root-zone water uptake and 'side' cracking

### Environment

Cracking is not just related to amount of rainfall in the critical cracking period. Conditions during the season leading up to harvest will also affect potential responses to rain.

### Crop Load

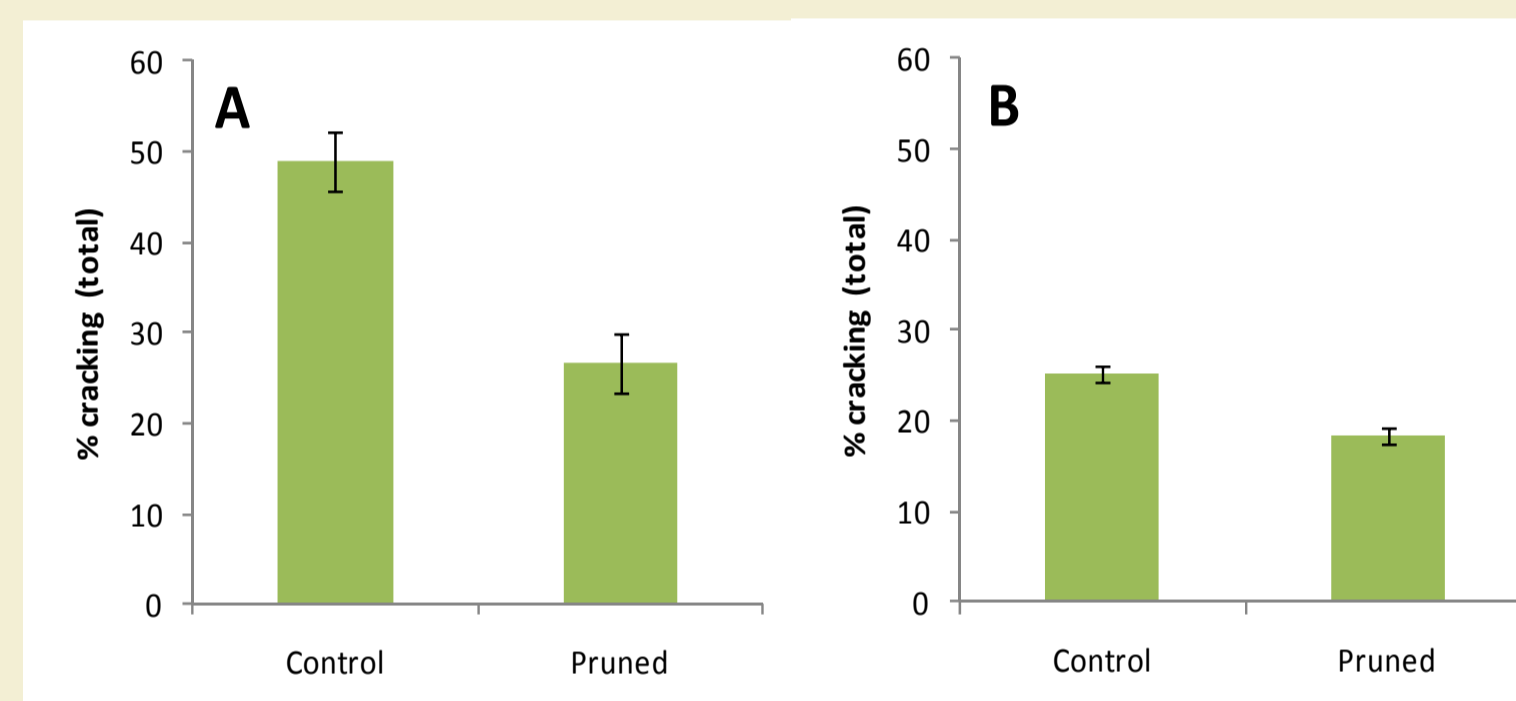
Higher crop loads show lower proportions of cracked fruit than lower crop loads. This is an important factor to keep in mind during fruit set.

### Variety

Varietal differences in cracking susceptibility have been seen in Tasmania. In addition, varieties seem to be predisposed to crack in particular ways.



A = Stem-end, B= Apical-end and C = Side crack



Percentage of total cracking without pruning and with extension pruning at two sites



Penny Measham downloading data from a Phyto-monitor data logger recording daily growth patterns of fruit

## Management

### Spray Applications

A significant reduction in cracking was seen with all spray treatments assessed. Reductions in total cracking of up to 50% were observed in some trials. No decrease in size, firmness or sugars was recorded.

### Irrigation

Daily fruit growth patterns showed fruit under low volumes of water experienced daily shrinkage, and did not recover on very hot, dry days. Maintaining irrigation to avoid water stress during the later stages of fruit development should provide some resistance to cracking through cuticular integrity.

### Crop Load

Low crop loads experienced high levels of cracking, the majority of which were side cracks. The effect of crop load on cracking levels were determined during the later stages of growth and cell expansion. Maintaining a medium or high crop load reduced cracking by as much as 50%. No decrease in size, firmness or sugars was recorded.

### Pruning

Removing top extension growth just after the commencement of rainfall during the two weeks prior to harvest resulted in a reduction in cracking of 50% and 25% at two different sites respectively (Figure 3). Pruning showed an increase in sugars but no decrease in size or other quality characteristics